

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
10 May 2001 (10.05.2001)

PCT

(10) International Publication Number
WO 01/33803 A1

(51) International Patent Classification⁷: H04L 29/06.
H04M 3/50

(21) International Application Number: PCT/FI00/00969

(22) International Filing Date:
6 November 2000 (06.11.2000)

(25) Filing Language: Finnish

(26) Publication Language: English

(30) Priority Data:
19992399 5 November 1999 (05.11.1999) FI

(71) Applicant (for all designated States except US): SONERA
OYJ [FI/FI]; Teollisuuskatu 15, FIN-00510 Helsinki (FI).

(72) Inventors; and

(75) Inventors/Applicants (for US only): ALA-LUUKKO,
Sami [FI/FI]; Paraistentie 18 A 2, FIN-00280 Helsinki
(FI). KOSKI, Jussi [FI/FI]; Aadolfinkatu 15 B 55,
FIN-00500 Helsinki (FI).

(74) Agent: PAPULA OY; P.O. Box 981, FIN-00101 Helsinki
(FI).

(81) Designated States (national): AE, AG, AL, AM, AT, AT
(utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility
model), DK, DK (utility model), DM, DZ, EE, EE (utility
model), ES, FI, FI (utility model), GB, GD, GE, GH, GM,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility
model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,
MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,
SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT,
TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

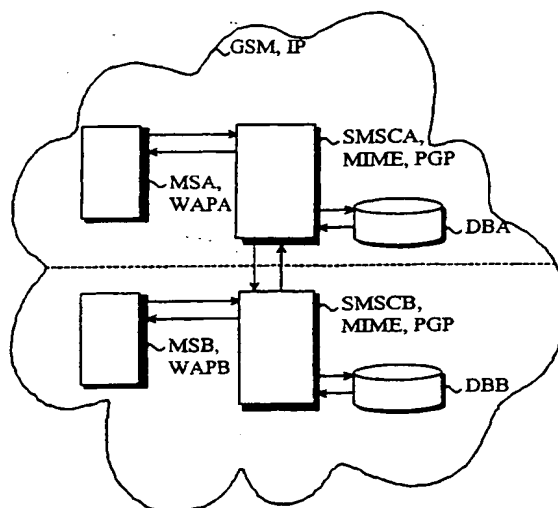
Published:

— With international search report.

— Before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments.

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: TRANSMISSION OF MULTIMEDIA MESSAGES BETWEEN MOBILE STATION TERMINALS



(57) Abstract: The present invention relates to a method and a system for transmitting messages containing multimedia information. The system comprises a first mobile station terminal (MSA), a second mobile station terminal (MSB), and a digital mobile network (GSM). According to the invention, the system comprises a first multimedia message server (SMSCA), a first address database (DBA), an IP network (IP), a second multimedia message server (SMSCB), and a second address database (DBB). The invention enables the transmitting of multimedia messages between different operators.

WO 01/33803 A1

Transmission of multimedia messages between mobile station terminals.

The invention relates to telecommunication. In particular, the invention relates to a new and advanced method of transmitting messages containing multimedia information between mobile station terminals.

PRIOR ART

The use of short messages in communication between mobile stations has become common for the past few years. The maximum length for a short message is up to 160 characters. The transmission of messages does not require that the mobile station is switched on. If the mobile station cannot be reached, the message is saved to the short message service centre. The short message service centre saves the message for several days, and if the mobile station receiving the message is activated in the area of the mobile network, then the message is sent to the mobile station. Messages are being transmitted either in the area of the same cell or to other cells by means of the roaming feature of the mobile station. Typically, short messages are being transmitted in a pan-European digital mobile network (GSM, Global System for Mobile Communications).

As known, short messages may only be used for sending messages in a text form. The quick development of technology has lead to the fact that in the near future, the consumers will be offered also a possibility to the use of multimedia messages consisting of different media components. Multimedia messages have not, however, been standardized in any way, so it is apparent that the solutions to be offered are operator-/device manufacturer-specific. The consequence of this is the problem that multimedia messages cannot be sent between different operators, or the transmission is going to be a difficult and expensive process.

OBJECTIVE OF THE INVENTION

The objective of the present invention is to disclose a new kind of method and system that eliminate the drawbacks referred to above or at least significantly alleviate them. One specific objective of the invention is to present a method and a system that enable the transmission of messages containing multimedia information between different operators.

10 SUMMARY OF THE INVENTION

In the present invention, a multimedia message is transmitted in a telecommunication network. The created multimedia message is sent from the first mobile station terminal, is transmitted further on, a notification informing about the multimedia message that came in is sent to the receiving second mobile station terminal, and the multimedia message is retrieved on the second mobile station terminal device. A multimedia message is used to mean a message, which advantageously consists of several different media components, such as an image, voice, text and/or graphics.

According to the invention, a multimedia message is sent from the first mobile station terminal to the first multimedia message server using the mobile communication network, the multimedia message is saved on the first multimedia message server to the mailbox of the sender; if necessary, the address information of the second multimedia message server is found out using the first address database arranged in conjunction with the first multimedia message server, an e-mail message is created based on the multimedia message, the e-mail message is transmitted from the first multimedia message server to the second multimedia message server using the IP network, a multimedia message is created based on the received e-mail message

using the second multimedia message server, the multimedia message is saved on the second multimedia message server to the mailbox of the receiver; if necessary, the address of the second terminal device is found out by means of the second address database arranged in conjunction with the second multimedia message centre, and a notification informing about the multimedia message that came in is sent from the second multimedia message server to the second terminal device using the mobile communication network. If necessary, the message may also be created a mailbox of its own. Multimedia message servers may be implemented as separate units, or they may be integrated with the already existing network components, e.g. with the short message server. A digital mobile network is, e.g. a GSM network. The IP network is used to mean a telecommunication network that uses the IP protocol (Internet Protocol, IP) for data transfer. This kind of network is, e.g. the public Internet network.

In an embodiment of the invention, an e-mail message is created based on the multimedia message by coding the multimedia message in question into an e-mail message in the MIME form, e.g. in such a way that the text part to be sent is attached to serve as the plain message body and the other parts of the message are attached to the attachment part of the message. MIME (Multipurpose Internet Mail Extensions, MIME) is a way of combining attachments to e-mail messages known in itself.

In an embodiment of the invention, information is maintained in the first address database that relates to the correlation between the DNS addresses (Domain Name Server, DNS) and MSISDN numbers (Mobile Subscriber ISDN, MSISDN) of multimedia message servers.

In an embodiment of the invention, information is maintained in the second address database that

relates to the correlation between the MSISDN numbers and e-mail addresses belonging to the sphere of the second multimedia message server.

5 In an embodiment of the invention, a multimedia message is sent from the first mobile station terminal using a browser-type user interface in the terminal device in question. Advantageously, this kind of browser-type user interface has been implemented using the WAP technology (Wireless Access Protocol, WAP)

10 In an embodiment of the invention, the multimedia message is retrieved on the second mobile station terminal using a browser-type user interface in the terminal device in question. Advantageously, this kind of browser-type user interface has been implemented using the WAP technology.

15 In an embodiment of the invention, the e-mail to be transmitted is encrypted. For the encryption, an encryption method PGP (Pretty Good Privacy, PGP) known in itself may be used.

20 In an embodiment of the invention, the e-mail message is transmitted using the SMTP protocol (Simple Message Transfer Protocol, SMTP).

In an embodiment of the invention, a billing ticket is generated based on the multimedia message.

25 As compared with prior art, the present invention provides the advantage that it makes it possible to send multimedia messages between different operators. Since the invention utilizes existing generally known e-mail practices, the solution in accordance with the invention is easy to implement and
30 widen. Further, the solution in accordance with the invention does not require the building of dedicated connections between the multimedia message servers because one may use the public Internet. Due to the possibility of encryption, the information security is
35 not endangered either.

BRIEF DESCRIPTION OF THE DRAWINGS

In the following section, the invention will be described by the aid of attached examples of embodiments with reference to the accompanying drawing,
5 in which

Fig. 1 schematically represents one system in accordance with the invention; and

Fig. 2 schematically represents one method in accordance with the invention.

10

DETAILED DESCRIPTION OF THE INVENTION

Fig. 1 is a block diagram representing, by way of example, the components of one system in accordance with the invention. As shown by Fig 1, the system comprises a mobile station terminal MSA for sending the multimedia message, a second mobile station terminal MSB for receiving the multimedia message, and a digital mobile network GSM. According to the invention, the system comprises a first multimedia message server SMSCA for saving the multimedia message, transforming it into an e-mail message and for sending the e-mail message in question to the second multimedia message server SMSCB, a first address database DBA for maintaining the address information of the multimedia message servers, which first address database DBA is arranged in conjunction with the first multimedia message server SMSCA, an IP network IP for transmitting the e-mail message in question from the first multimedia message server SMSCA to the second multimedia message server SMSCB; a second multimedia message server SMSCB for transforming the received e-mail message into a multimedia message, for saving the multimedia message and for sending a notification of the multimedia message that came in to the second terminal device MSB, and a second address database DBB for maintaining the address information of mobile subscribers belong-

ing to the sphere of the second multimedia message server SMSCB, which second address database DBB has been arranged in conjunction with the second multimedia message server SMSCB. In addition, the system comprises a coder MIME for coding the multimedia message into an e-mail message in the MIME form as well as an encrypting method PGP for encrypting the e-mail message to be transmitted. The first terminal device MSA comprises a browser-type user interface WAPA. In addition, the second terminal device MSB comprises a browser-type user interface WAPB.

Fig. 2 is a flow chart representing, by way of example, one method in accordance with the invention, by means of which method a short message is sent between two different operators via the IP network. At first, the user of the mobile station writes a short message, block 21. The short message is sent to the short message service centre, block 22. In the short message service centre, the short message is temporarily saved to the mailbox of the sender, block 23. A billing ticket is sent to the database, block 24. The address of the message is, e.g. of the form +358400123456@mmm.operator.com. Based on the country code of the message and the operator code, +358400, the e-mail server of the recipient becomes clear, block 25. For finding out the country code, operator code and the address of the e-mail server, a specific database is maintained in the short message service centre. The message is transmitted via the IP network to the server of the recipient, block 26. For the period of the data transfer, the multimedia information is coded by a multipurpose Internet mail extension (MIME, Multipurpose Internet Mail Extension), and for the transfer itself, a simple message transfer protocol (STMP, Simple Message Transfer Protocol) is used. The address of the message is being further examined on the receiving server. The receiving server is

equipped with a database using which the address of the message +358400123456@mmm.operator.com may be transformed into the form of an e-mail message of the recipient First name.Family name@mmm.operator.com, 5 block 27. After this, the message is saved to the electronic mail box of the recipient, block 28. If there is no electronic mail box, a new electronic mail box is created. A billing ticket is created based on the message that is sent to the server that sent the 10 message, and after this the receiver of the message is sent the whole message or a part of the message, blocks 29 and 210. The transmission type of the message is selected based on the features of the terminal device of the recipient and the network.

15 The invention is not restricted merely to the embodiments referred to above, instead many variations are possible within the scope of the inventive idea defined by the claims.

CLAIMS

1. A method for transmitting multimedia messages in a telecommunication network comprising the steps of:

5 sending the multimedia message from the first mobile station terminal,

 transmitting the multimedia message,

 sending a notification of the multimedia message that came in to the second mobile station terminal,

10 retrieving the multimedia message on the second mobile station terminal,

 characterised in that the method further comprises the steps of:

15 sending the multimedia message from the first mobile station terminal to the first multimedia message server via the digital mobile network,

 saving the multimedia message on the first multimedia message server to the mailbox of the sender,

20 finding out the address information of the second multimedia message server, if necessary, by utilizing the first database arranged in conjunction with the first multimedia message server,

25 creating an e-mail message based on the multimedia message,

 transmitting the e-mail message from the first multimedia message server to the second multimedia message server,

30 creating a multimedia message based on the e-mail message received on the second multimedia message server,

 saving the multimedia message on the second multimedia message server to the mailbox of the recipient,

35 finding out the address information of the second terminal device, if necessary, by utilizing the

second database arranged in conjunction with the second multimedia message centre, and

5 sending a notification of the multimedia message that came in from the second multimedia message server to the second terminal device via the mobile communication network.

2. A method as defined in claim 1, characterised in that the method further comprises the step of:

10 creating an e-mail message based on the multimedia message by coding the multimedia message in question into an e-mail message in the MIME form.

3. A method as defined in claim 1 or 2, characterised in that the method further comprises the step of:

15 maintaining in the first address database information relating to the correlation between the DNS addresses and MSISDN numbers of the multimedia message servers.

20 4. A method as defined in claim 1, 2 or 3, characterised in that the method further comprises the step of:

25 maintaining in the second address database information relating to the correlation between the MSISDN numbers and e-mail addresses of the mobile subscribers belonging to the sphere of the second multimedia message server.

5. A method as defined in claim 1, 2, 3 or 4, characterised in that the method further comprises the step of:

30 sending the multimedia message from the first mobile station terminal using a browser-type user interface in the terminal device in question.

6. A method as defined in claim 1, 2, 3, 4 or 35 5, characterised in that the method further comprises the step of:

retrieving the multimedia message on the second mobile station terminal using a browser-type user interface in the terminal device in question.

7. A method as defined in claim 1, 2, 3, 4, 5 or 6, characterised in that the method further comprises the step of:

encrypting the e-mail message to be transmitted

8. A method as defined in claim 1, 2, 3, 4, 5, 6 or 7, characterised in that the method further comprises the step of:

transmitting the e-mail message using the SMTP protocol.

9. A method as defined in claim 1, 2, 3, 4, 5, 6, 7 or 8, characterised in that the method further comprises the step of:

generating a billing ticket based on the multimedia message.

10. A system for transmitting a multimedia message in a telecommunication network comprising:

a first mobile station terminal (MSA) for sending the multimedia message,

a second mobile station terminal (MSB) for receiving the multimedia message, and

a digital mobile network (GSM),

characterised in that the system further comprises:

a first multimedia message server (SMSCA) for saving the multimedia message to be transmitted, transforming it into an e-mail message as well as for sending the e-mail message in question to the second multimedia message server (SMSCB),

a first address database (DBA) for maintaining the address information of the multimedia message servers, which first address database (DBA) has been arranged in conjunction with the first multimedia message server (SMSCA),

an IP network (IP) for transmitting the e-mail message in question from the first multimedia message server (SMSCA) to the second multimedia message server (SMSCB),

5 a second multimedia message server (SMSCB) for transforming the received e-mail message into a multimedia message, for saving the multimedia message and for sending a notification of the multimedia message that came in to the second terminal device (MSB),
10 and

a second address database (DBB) for maintaining the address information of mobile subscribers belonging to the sphere of the second multimedia message server (SMSCB), which second address database (DBB)
15 has been arranged in conjunction with the second multimedia message server (SMSCB).

11. A method as defined in claim 10, characterised in that the system further comprises:
a coder (MIME) for coding the multimedia message into an e-mail message in the MIME form.
20

12. A system as defined in claim 10 or 11, characterised in that the system further comprises:

a first address database (DBA) for maintaining the correlation information of the DNS addresses and MSISDN numbers of the multimedia message servers.
25

13. A method as defined in claim 10, 11 or 12, characterised in that the system further comprises:

30 a second address database (DBB) for maintaining the correlation information between the MSISDN numbers and e-mail addresses of the mobile subscribers belonging to the sphere of the second multimedia message server.

35 14. A system as defined in claim 10, 11, 12 or 13, characterised in that the first terminal device (MSA) further comprises:

a browser-type user interface (WAPA).

15. A system as defined in claim 10, 11, 12, 13 or 14, characterised in that the second terminal device (MSB) further comprises:

5 a browser-type user interface (WAPB).

16. A method as defined in claim 10, 11, 12, 13, 14 or 15, characterised in that the system further comprises:

an encryption method (PGB) for encrypting the
10 e-mail message to be transmitted.

1/2

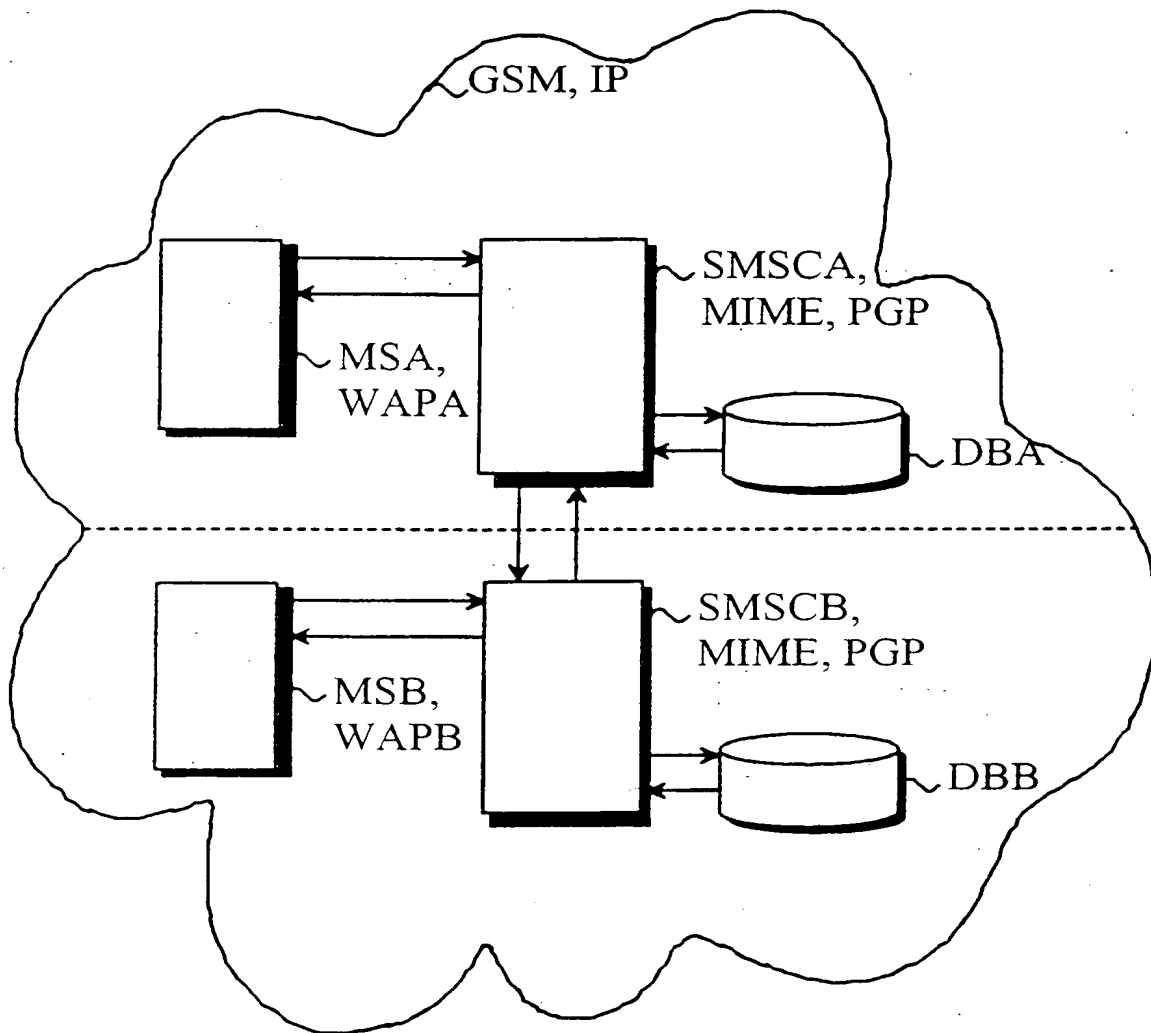


Fig. 1

2/2

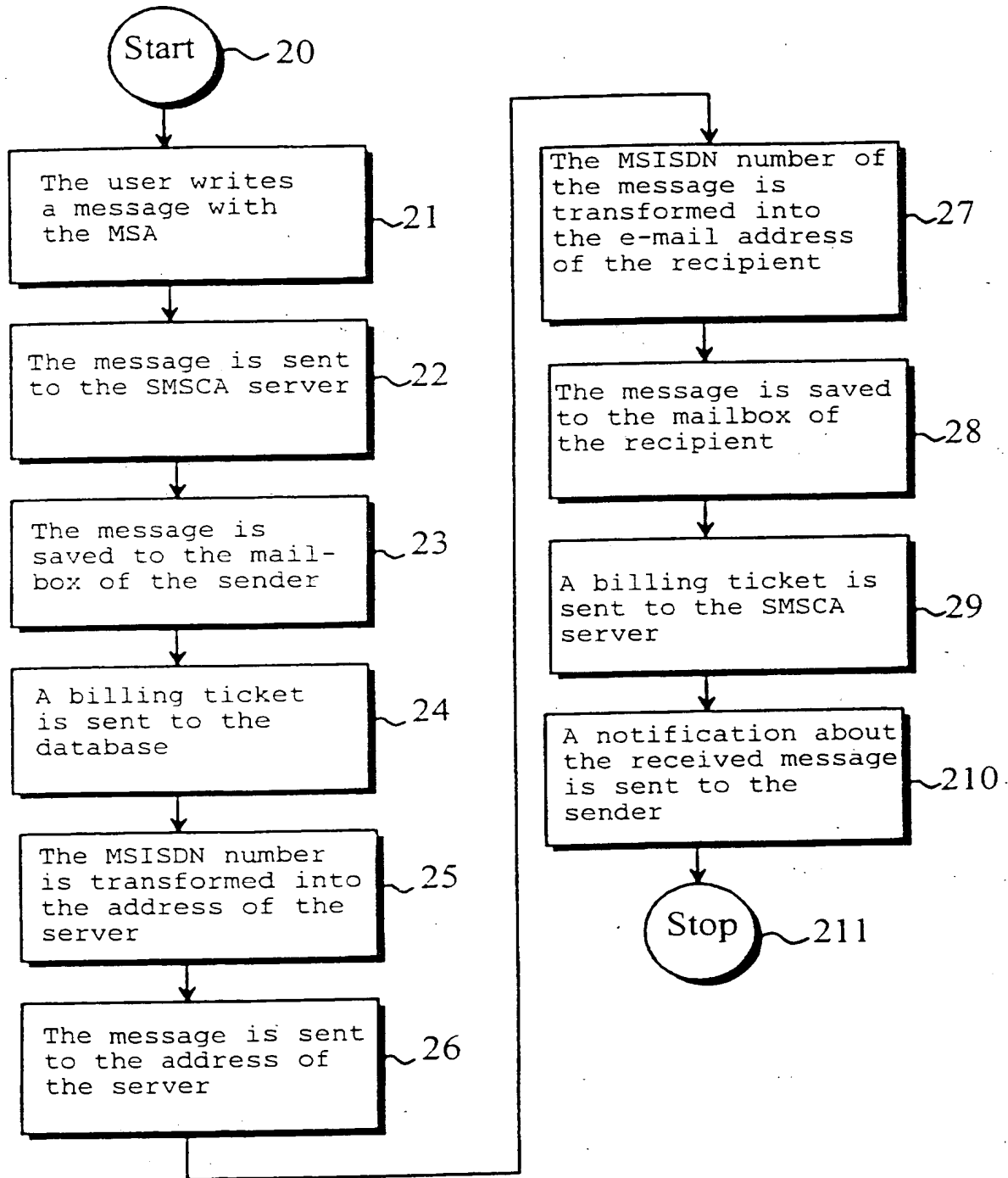


Fig. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 00/00969

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 29/06, H04M 3/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04L, H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 9819438 98 (TELEFONAKTIEBOLAGET LM ERICSSON (PUBL)), 7 May 1998 (07.05.98), page 9, line 23 - page 11, line 4, figure 2 --	1-16
Y	EP 0817443 A2 (AT & T CORP.), 7 January 1998 (07.01.98), column 5, line 2 - column 6, line 18 --	1-16
A	US 5742905 A (PEPE ET AL), 21 April 1998 (21.04.98), column 25, line 40 - column 27, line 12 --	1-16
A	WO 9708906 A1 (SENDIT AB), 6 March 1997 (06.03.97), the whole document --	1-16

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

<ul style="list-style-type: none"> "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed 	<ul style="list-style-type: none"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
--	--

Date of the actual completion of the international search

5 March 2001

Date of mailing of the international search report

06-03-2001

Name and mailing address of the ISA/

Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Nabil Ayoub/js
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

Information on patent family members

05/02/01

International application No.

PCT/FI 00/00969

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9819438	98	07/05/98	AU	722329 B	27/07/00
				AU	4888897 A	22/05/98
				BR	9712387 A	31/08/99
				CN	1235727 A	17/11/99
				EP	092853E A	14/07/99
				SE	510664 C	14/06/99
				SE	9603948 A	30/04/98
EP	0817443	A2	07/01/98	CA	2205704 A	27/12/97
				JP	10126438 A	15/05/98
				US	5768513 A	16/06/98
US	5742905	A	21/04/98	CA	2199802 A	28/03/96
				EP	0782805 A	09/07/97
				JP	9511884 T	25/11/97
				US	5742668 A	21/04/98
				WO	9609714 A	28/03/96
WO	9708906	A1	06/03/97	AU	716109 B	17/02/00
				AU	6894196 A	19/03/97
				BR	9610157 A	11/08/98
				CA	2230544 A	06/03/97
				CN	1199534 A	18/11/98
				EP	0872128 A	21/10/98
				IL	123497 D	00/00/00
				JP	11511608 T	05/10/99
				NO	98083E A	29/04/98
				NZ	316656 A	28/07/98
				PL	325196 A	06/07/98
				SE	503752 C	26/08/96
				SE	9502995 A	26/08/96